



PASSMEDICINE PART 2

GERIATRICS

2024





An 85-year-old man with hypertension has been admitted to the hospital following a fall with a subsequent fractured neck femur. Before his admission, he lived with his wife and was independent with all activities of daily living. Four days after his admission, the nursing staff mentioned that he is confused at night and calls for his deceased parents. His vital signs are normal. Upon your assessment, he has bilateral crackles on the auscultation of his chest.

His blood tests show:

Hb	120 g/L	Male: (135-180) Female: (115 - 160)
Platelets	200 * 10 ⁹ /L	(150 - 400)
WBC	7.1 * 10 ⁹ /L	(4.0 - 11.0)
Na ⁺	136 mmol/L	(135 - 145)
K ⁺	4.0 mmol/L	(3.5 - 5.0)
Urea	5.0 mmol/L	(2.0 - 7.0)
Creatinine	100 µmol/L	(55 - 120)

What is the single most likely cause of his symptoms?

- ☐ Alcohol withdrawal ×
- ☐ Anaemia ×
- ☐ Constipation ×
- ☐ Hospital-acquired pneumonia ×
- ☐ Undiagnosed Alzheimer's ×

Submit answer

Reference ranges



Question 1 of 16



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Na ⁺	136 mmol/L	(135 - 145)
K ⁺	4.0 mmol/L	(3.5 - 5.0)
Urea	5.0 mmol/L	(2.0 - 7.0)
Creatinine	100 µmol/L	(55 - 120)

What is the single most likely cause of his symptoms?

Alcohol withdrawal	13%
Anaemia	0%
Constipation	48%
Hospital-acquired pneumonia	37%
Undiagnosed Alzheimer's	2%

Constipation can cause delirium in the elderly

Important for me Less important

The patient presents with acute and fluctuating symptoms of confusion, which are indicative of delirium. This condition can arise from many causes, including infections. **Constipation** should be considered as a potential cause of delirium, particularly after hospitalisation for a fracture due to a




fall. Such patients may not be as mobile, have a different diet from their normal, and may be on medications which cause constipation, such as opioids.

It is crucial to exclude **alcohol withdrawal** as a differential diagnosis. Symptoms include confusion, hallucinations and agitation. Symptoms that may help to differentiate alcohol withdrawal from delirium include tremors, sweating, nausea and, if severe, autonomic instability. The most severe symptoms often occur 48-96 hours after a person's last drink. The lack of such features makes alcohol withdrawal unlikely.

This patient is slightly **anaemic**, and this requires a review of his pre-surgery blood tests to determine if it could be due to his recent surgery or other causes. However, this degree of anaemia is less likely to cause delirium.

While **hospital-acquired pneumonia** is frequently implicated in delirium, the current case lacks specific symptoms (including fever and productive cough) or diagnostic blood test results (including deranged white cell count) to substantiate this cause. His chest findings are more likely to be due to atelectasis post-surgery rather than bilateral pneumonia.

Delirium is characterised by acute onset and fluctuating cognitive symptoms. There is no description of cognitive impairment before admission. He is, therefore, more likely to have delirium than **undiagnosed Alzheimer's**. If the patient's confusion is not resolved with treatment, obtaining a comprehensive history and considering further investigations would be necessary.

		 Discuss (1)	Improve
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Next question >

Acute confusional state ★

Acute confusional state is also known as delirium or acute organic brain syndrome. It affects up to 30% of elderly patients admitted to hospital.

Predisposing factors include:

- age > 65 years
- background of dementia
- significant injury e.g. hip fracture
- frailty or multimorbidity
- polypharmacy

The precipitating events are often multifactorial and may include:

- infection: particularly urinary tract infections
- metabolic: e.g. hypercalcaemia, hypoglycaemia, hyperglycaemia, dehydration
- change of environment
- any significant cardiovascular, respiratory, neurological or endocrine condition
- severe pain
- alcohol withdrawal
- constipation

Features - a wide variety of presentations

- memory disturbances (loss of short term > long term)
- may be very agitated or withdrawn
- disorientation
- mood change
- visual hallucinations
- disturbed sleep cycle
- poor attention

Management

- treatment of the underlying cause
- modification of the environment
- the 2006 Royal College of Physicians publication 'The prevention, diagnosis and management of delirium in older people: concise guidelines' recommended haloperidol 0.5 mg as the first-line sedative
- the 2010 NICE delirium guidelines advocate the use of haloperidol or olanzapine
- management can be challenging in patients with Parkinson's disease, as antipsychotics can often worsen Parkinsonian symptoms
 - careful reduction of the Parkinson medication may be helpful
 - if symptoms require urgent treatment then the atypical antipsychotics quetiapine and clozapine are preferred



123



Next question >

B

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A



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Links

Clinical Knowledge Summaries

 21  8

[Delirium](#)

NICE

 21  3

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| 11 | ✗ |
| 12 | ✓ |
| 13 | ✗ |
| 14 | ✓ |
| 15 | ✗ |
| 16 | ✗ |



Question 2 of 16



A 73-year-old man is being treated in hospital for a urinary tract infection. He was initially confused, however, this has since improved. His daughter, however, reports that over the past six months his short-term memory has declined and he is having visual hallucinations.

On physical assessment, his respiratory rate is 16/min, oxygen saturation 95% on air, and the chest is clear. His heart rate is 69/min, blood pressure is 121/80mmHg, and is warm and well perfused. The abdomen is soft and non-tender. His Glasgow coma score is 14 due to confusion for voice and he is afebrile at 36.6°C. Some mild rigidity is noted on neurological examination but otherwise is normal.

Which medication is most likely to treat his ongoing symptoms?

- | | |
|--|---|
| <input type="radio"/> Aspirin | × |
| <input type="radio"/> Levodopa | × |
| <input type="radio"/> Memantine | × |
| <input type="radio"/> Prophylactic antibiotics | × |
| <input type="radio"/> Rivastigmine | × |

Submit answer

Reference ranges ▾

Score: **0%**

1 -

2 -



Question 2 of 16



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On physical assessment, his respiratory rate is 16/min, oxygen saturation 95% on air, and the chest is clear. His heart rate is 69/min, blood pressure is 121/80mmHg, and is warm and well perfused. The abdomen is soft and non-tender. His Glasgow coma score is 14 due to confusion for voice and he is afebrile at 36.6°C. Some mild rigidity is noted on neurological examination but otherwise is normal.

Which medication is most likely to treat his ongoing symptoms?

Aspirin	0%
Levodopa	13%
Memantine	15%
Prophylactic antibiotics	2%
Rivastigmine	71%

Acetylcholinesterase inhibitors (e.g. donepezil, rivastigmine) can help alleviate the features of Lewy body dementia

Important for me Less important

This man has presented with Lewy body dementia. This is evidenced by memory impairment, visual hallucinations, and signs of parkinsonism. Donepezil and rivastigmine are very effective in the treatment of Lewy body dementia therefore rivastigmine is the correct answer.




Aspirin is a treatment that may be used in vascular dementia, however, this is not the diagnosis here. Vascular dementia presents with step-wise deterioration in memory and is not associated with visual hallucinations or parkinsonism.

Levodopa is a treatment for Parkinson's disease. Although this man is exhibiting some mild parkinsonism on neurological examination, this is likely due to Lewy body dementia given his memory impairment and visual hallucinations. Acetylcholinesterase inhibitors are the most

effective treatment in Lewy body dementia and can treat both cognitive and motor symptoms. Therefore, levodopa would not be indicated first-line in this case.

Memantine is used in advanced Alzheimer's dementia with behavioural and psychological symptoms. Alzheimer's is not the diagnosis here as it is not associated with visual hallucinations in a mild or moderate stage and does not cause motor symptoms. Memantine is therefore incorrect as it is not indicated in Lewy body dementia.

As this man has had a continuous six-month history of memory impairment, visual hallucinations, and parkinsonism, recurrent UTIs are unlikely to be the culprit. Therefore, prophylactic antibiotics are not indicated.

   Discuss (2) [Improve](#)

[Next question >](#)

Lewy body dementia ★

Lewy body dementia is an increasingly recognised cause of dementia, accounting for up to 20% of cases. The characteristic pathological feature is alpha-synuclein cytoplasmic inclusions (Lewy bodies) in the substantia nigra, paralimbic and neocortical areas.

The relationship between Parkinson's disease and Lewy body dementia is complicated, particularly as dementia is often seen in Parkinson's disease. Also, up to 40% of patients with Alzheimer's have Lewy bodies.

Features

- progressive cognitive impairment
 - typically occurs before parkinsonism, but usually both features occur within a year of each other. This is in contrast to Parkinson's disease, where the motor symptoms typically present at least one year before cognitive symptoms
 - cognition may be fluctuating, in contrast to other forms of dementia
 - in contrast to Alzheimer's, early impairments in attention and executive function rather than just memory loss
- parkinsonism
- visual hallucinations (other features such as delusions and non-visual hallucinations may also be seen)

Diagnosis

- usually clinical

- single-photon emission computed tomography (SPECT) is increasingly used. It is currently commercially known as a DaTscan. Dopaminergic iodine-123-radiolabelled 2-carbomethoxy-3-(4-iodophenyl)-N-(3-fluoropropyl) nortropane (123-I FP-CIT) is used as the radioisotope. The sensitivity of SPECT in diagnosing Lewy body dementia is around 90% with a specificity of 100%

Management

- both **acetylcholinesterase inhibitors** (e.g. donepezil, rivastigmine) and memantine can be used as they are in Alzheimer's. NICE have made detailed recommendations about what drugs to use at what stages. Please see the link for more details
- neuroleptics should be avoided in Lewy body dementia as patients are extremely sensitive and may develop irreversible parkinsonism. Questions may give a history of a patient who has deteriorated following the introduction of an antipsychotic agent



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Next question >

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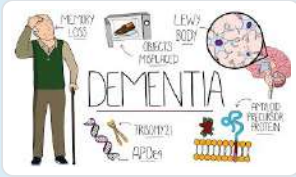


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Media



Understanding Dementia (Alzheimer's & Vascular & Frontotemporal & Lewy Body Dementia)

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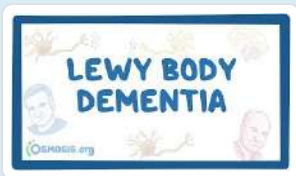
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Parkinson's disease

MedFlix - YouTube

👍 0 🗨️ 0



Lewy body dementia

Osmosis - YouTube

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Score: **18.8%**

- 1 ✗
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| 14 | ✓ |
| 15 | ✗ |
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Question 3 of 16



A 74-year-old female has been diagnosed with moderate to severe Alzheimer's disease, on a background of a two-year progressive gradual cognitive decline. Her family had tried to cope on their own without seeking medical help, putting it down to old age but now, most likely requires nursing home care. MMSE 7/30. She has a past medical history of previous myocardial infarctions. She has not complained of chest pain recently and her ECG demonstrates no ischaemic changes, a PR interval of 290ms. What is the most appropriate treatment strategy?

- | | |
|------------------------------------|---|
| <input type="radio"/> Donepezil | × |
| <input type="radio"/> Memantine | × |
| <input type="radio"/> Galantamine | × |
| <input type="radio"/> Rivastigmine | × |
| <input type="radio"/> Aspirin | × |

Submit answer

Reference ranges ▾

Score: **0%**

- 1 -
- 2 -
- 3 -







Question 3 of 16



A 74-year-old female has been diagnosed with moderate to severe Alzheimer's disease, on a background of a two-year progressive gradual cognitive decline. Her family had tried to cope on their own without seeking medical help, putting it down to old age but now, most likely requires nursing home care. MMSE 7/30. She has a past medical history of previous myocardial infarctions. She has not complained of chest pain recently and her ECG demonstrates no ischaemic changes, a PR interval of 290ms. What is the most appropriate treatment strategy?

Donepezil	12%
Memantine	76%
Galantamine	2%
Rivastigmine	9%
Aspirin	1%

There are two key facts to this patient: firstly, the patients MMSE is suggestive of severe dementia. Secondly, the diagnosis of 1st degree heart block and hence atrioventricular nodal block is a contraindication for cholinesterase inhibitors, which could precipitate complete heart block. In accordance with the latest set of NICE guidelines, donepezil, galantamine and rivastigmine are all appropriate for mild to moderate dementia, defined as MMSE between 10 and 26/30. However, only memantine, an NMDA antagonist, has demonstrated efficacy and is licensed for severe Alzheimer's disease.



 Discuss (2)
  Improve

Next question >

Alzheimer's disease: management ★

Alzheimer's disease is a progressive degenerative disease of the brain accounting for the majority of dementia seen in the UK

Non-pharmacological management

- NICE recommend *offering* 'a range of activities to promote wellbeing that are tailored to the person's preference'
- NICE recommend *offering* group cognitive stimulation therapy for patients with mild and moderate dementia
- other options to *consider* include group reminiscence therapy and cognitive rehabilitation

Pharmacological management

- NICE updated it's dementia guidelines in 2018
- the three acetylcholinesterase inhibitors (donepezil, galantamine and rivastigmine) as options for managing mild to moderate Alzheimer's disease
- memantine (an NMDA receptor antagonist) is in simple terms the 'second-line' treatment for Alzheimer's, NICE recommend it is used in the following situation reserved for patients with
 - moderate Alzheimer's who are intolerant of, or have a contraindication to, acetylcholinesterase inhibitors
 - as an add-on drug to acetylcholinesterase inhibitors for patients with moderate or severe Alzheimer's
 - monotherapy in severe Alzheimer's

Managing non-cognitive symptoms

- NICE does not recommend antidepressants for mild to moderate depression in patients with dementia
- antipsychotics should only be used for patients at risk of harming themselves or others, or when the agitation, hallucinations or delusions are causing them severe distress

Donepezil

- is relatively contraindicated in patients with bradycardia
- adverse effects include insomnia

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Next question >



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Links

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Alzheimer's Society

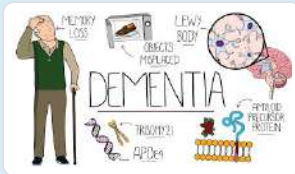
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Speed Pharmacology - YouTube

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| 11 | × |
| 12 | ✓ |
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Question 4 of 16



A 78-year-old woman with a background of hypertension, depression, and dementia is admitted due to social concerns as her husband is struggling to provide care for her activities of daily living at home. She has her observations taken which include oxygen saturations of 96% on room air, a respiratory rate of 16/min, a heart rate of 47/min, a blood pressure of 101/64mmHg, and a temperature of 36.3°C.

An ECG is performed which shows normal sinus rhythm with no other abnormalities.

A medication review is conducted.

What medication should be stopped?

<input type="radio"/> Amlodipine	×
<input type="radio"/> Donepezil	×
<input type="radio"/> Memantine	×
<input type="radio"/> Mirtazapine	×
<input type="radio"/> Sertraline	×

Submit answer

Reference ranges 

Score: **0%**

- 1 -
- 2 -
- 3 -
- 4 -



Question 4 of 16



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An ECG is performed which shows normal sinus rhythm with no other abnormalities.

A medication review is conducted.

What medication should be stopped?

Amlodipine	9%
Donepezil	79%
Memantine	5%
Mirtazapine	4%
Sertraline	3%

Donepezil is generally avoided (relative contraindication) in patients with bradycardia and is used with caution in other cardiac abnormalities

Important for me Less important


Donepezil is a cholinesterase inhibitor used to treat Alzheimer's dementia. Due to the pro-cholinergic effects it has, it is strongly associated with bradycardia which is an indication to stop the medication. With a heart rate of 47/min, donepezil should be stopped in this case.

Amlodipine is a dihydropyridine calcium channel blocker that is non-cardio-selective. It is therefore not the medication most likely to be resulting in this woman's bradycardia. As her blood pressure is normal, there is no indication to stop this medication.

Memantine is a N-Methyl-D-Aspartate antagonist used for advanced dementia. Although bradycardia is a reported side effect of memantine, this is relatively rare. As memantine is much less likely to be the cause than donepezil, it would be prudent to hold the donepezil initially.

Mirtazapine can cause prolonged QT interval however the ECG here shows sinus bradycardia and is otherwise normal so it is unlikely to be causing this woman's bradycardia.

Sertraline is another medication that can cause QT prolongation but again as the only positive finding from the ECG is sinus bradycardia, it is not likely to be the cause.

		 Discuss (2)	Improve
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Next question >

Alzheimer's disease: management ★

Alzheimer's disease is a progressive degenerative disease of the brain accounting for the majority of dementia seen in the UK

Non-pharmacological management

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- NICE recommend *offering* group cognitive stimulation therapy for patients with mild and moderate dementia
- other options to *consider* include group reminiscence therapy and cognitive rehabilitation

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Donepezil

- is relatively contraindicated in patients with bradycardia
- adverse effects include insomnia

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Next question >

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Links

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Score: **18.8%**

- 1 ✗
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- 14 ✓
- 15 ✗
- 16 ✗



Question 5 of 16



A 82-year-old man is reviewed in memory clinic. He denies any problems himself, but his wife has noticed changes in his memory and therefore asked his GP to see if he has dementia. She has noticed that he at times forgets where he is, forgets that he has asked things in the middle of a conversation, seems to respond to things that are not there and has reported that he 'sees things'. However, at other times he is able to have completely normal conversations. He has a past medical history of prostate cancer which has been managed with hormone therapy, of which she knows he had 'blood tests' to monitor which have been normal. Other than this he has COPD which is well controlled, hypertension and osteoarthritis. He has had no recent changes in medication. He used to smoke, but quit 20 years ago. He used to drink heavily but has completely stopped five years ago.

On examination the patient is alert and orientated. He has a slight tremor in his left hand, and increased tone in muscles.

What is the most likely diagnosis?

- | | |
|---|---|
| <input type="radio"/> Lewy-body dementia | × |
| <input type="radio"/> Alzheimer's disease | × |
| <input type="radio"/> Brain metastases | × |
| <input type="radio"/> Vascular dementia | × |
| <input type="radio"/> Subdural haematoma | × |

Submit answer

Reference ranges ▾

Score: 0%

- 2 -
- 3 -
- 4 -
- 5 -



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On examination the patient is alert and orientated. He has a slight tremor in his left hand, and increased tone in muscles.

What is the most likely diagnosis?

Lewy-body dementia	90%
Alzheimer's disease	4%
Brain metastases	1%
Vascular dementia	4%
Subdural haematoma	1%

Lewy body dementia typically presents with fluctuating cognition in contrast to other forms of dementia

Important for me Less important

A history of progressive decline in cognitive function with fluctuations, visual hallucinations and Parkinsonisms is most likely Lewy-body dementia. The main differential diagnosis is Alzheimer's disease, which has a greater element of progressive cognitive decline, and is not usually associated with hallucinations and fluctuations. Brain metastases are important to exclude but the normal blood tests for prostate cancer - likely PSA - are a good indicator that this is unlikely. Vascular dementia can occur with progressive changes of dementia, especially with a history of high blood pressure and smoking, but this is not what has been described. A subdural haematoma is a strong

differential when there is fluctuating consciousness in the context of head trauma and anticoagulant medications.



Discuss (1)

Improve

Next question >

Lewy body dementia ★

Lewy body dementia is an increasingly recognised cause of dementia, accounting for up to 20% of cases. The characteristic pathological feature is alpha-synuclein cytoplasmic inclusions (Lewy bodies) in the substantia nigra, paralimbic and neocortical areas.

The relationship between Parkinson's disease and Lewy body dementia is complicated, particularly as dementia is often seen in Parkinson's disease. Also, up to 40% of patients with Alzheimer's have Lewy bodies.

Features

- progressive cognitive impairment
 - typically occurs before parkinsonism, but usually both features occur within a year of each other. This is in contrast to Parkinson's disease, where the motor symptoms typically present at least one year before cognitive symptoms
 - cognition may be fluctuating, in contrast to other forms of dementia
 - in contrast to Alzheimer's, early impairments in attention and executive function rather than just memory loss
- parkinsonism
- visual hallucinations (other features such as delusions and non-visual hallucinations may also be seen)

Diagnosis

- usually clinical
- single-photon emission computed tomography (SPECT) is increasingly used. It is currently commercially known as a DaTscan. Dopaminergic iodine-123-radiolabelled 2-carbomethoxy-3-(4-iodophenyl)-N-(3-fluoropropyl) nortropane (123-I FP-CIT) is used as the radioisotope. The sensitivity of SPECT in diagnosing Lewy body dementia is around 90% with a specificity of 100%

Management

- both acetylcholinesterase inhibitors (e.g. donepezil, rivastigmine) and memantine can be used as they are in Alzheimer's. NICE have made detailed recommendations about what drugs to

use at what stages. Please see the link for more details

- neuroleptics should be avoided in Lewy body dementia as patients are extremely sensitive and may develop irreversible parkinsonism. Questions may give a history of a patient who has deteriorated following the introduction of an antipsychotic agent



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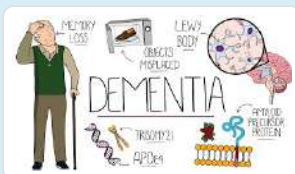
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Media



[Understanding Dementia \(Alzheimer's & Vascular & Frontotemporal & Lewy Body Dementia\)](#)

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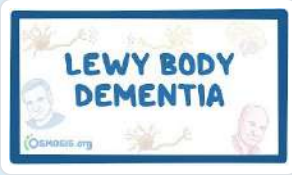
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Parkinson's disease

MedFlix - YouTube

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Lewy body dementia

Osmosis - YouTube

👍 3 👎 1

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Score: **18.8%**

- 1 ✗
- 2 ✗
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- 5** ✗
- 6 ✗
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- 12 ✓
- 13 ✗
- 14 ✓
- 15 ✗
- 16 ✗



A 72-year-old man presents to the emergency department with confusion. He has a past medical history of hypertension, Parkinson's disease and hypercholesterolemia. His medications include co-careldopa, amlodipine and atorvastatin. He normally lives alone and is independent.

Observations:

- Heart rate 101 beats per minute
- Blood pressure 120/77 mmHg
- Respiratory rate 20/minute
- Oxygen saturations 97% on room air
- Temperature 37.8°C

On examination, there is suprapubic tenderness. His Glasgow coma scale is 14/15.

He is treated with appropriate antibiotics for a presumed urinary tract infection. Despite clinically and biochemically improving, he remains confused 3-4 days into the admission. Alternative causes of delirium are excluded. He subsequently becomes increasingly agitated and presents a danger to himself and other patients, despite conservative measures designed to re-orient him.

Given the clinical history, what is the most appropriate choice of medication?

- | | |
|-----------------------------------|---|
| <input type="radio"/> Clozapine | × |
| <input type="radio"/> Haloperidol | × |
| <input type="radio"/> Olanzapine | × |
| <input type="radio"/> Quetiapine | × |
| <input type="radio"/> Zopiclone | × |

Submit answer

Reference ranges ▾



Question 6 of 16



A 72-year-old man presents to the emergency department with confusion. He has a past medical history of hypertension, Parkinson's disease and hypercholesterolemia. His medications include co-careldopa, amlodipine and atorvastatin. He normally lives alone and is independent.

Observations:

- Heart rate 101 beats per minute
- Blood pressure 120/77 mmHg
- Respiratory rate 20/minute
- Oxygen saturations 97% on room air
- Temperature 37.8°C

On examination, there is suprapubic tenderness. His Glasgow coma scale is 14/15.

He is treated with appropriate antibiotics for a presumed urinary tract infection. Despite clinically and biochemically improving, he remains confused 3-4 days into the admission. Alternative causes of delirium are excluded. He subsequently becomes increasingly agitated and presents a danger to himself and other patients, despite conservative measures designed to re-orient him.

Given the clinical history, what is the most appropriate choice of medication?

Clozapine	4%
Haloperidol	18%
Olanzapine	10%
Quetiapine	64%
Zopiclone	4%

Quetiapine may be useful in the management of patients with Parkinson's disease who are in an acute confusional state

Important for me Less important




Quetiapine is correct. This patient presents with delirium secondary to a urinary tract infection on a background of PD. He has a progressively worsening confusional state and conservative measures have failed. He is a danger to himself and others and therefore pharmacological sedation is warranted. The most appropriate choice given his diagnosis of PD is quetiapine, which is less likely to cause worsening of his Parkinsonism than other antipsychotics, which have greater anti-dopaminergic effects.

Haloperidol is incorrect. This typical antipsychotic is used in the management of delirium. However, it has significant D2 antagonism effects and may therefore worsen the patient's PD.

Olanzapine is incorrect. This antipsychotic can be used in the management of delirium. However, it may worsen PD and therefore should be avoided.

Zopiclone is incorrect. The Z-drug class of medications is not a typical first-line choice for the management of delirium, in Parkinson's disease or otherwise.

Clozapine is incorrect. This atypical antipsychotic can be used in the management of delirium associated with PD. However, quetiapine would be the preferred initial choice due to the potential toxicity of clozapine treatment.

		 Discuss (4)	Improve
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Next question >

Acute confusional state ★

Acute confusional state is also known as delirium or acute organic brain syndrome. It affects up to 30% of elderly patients admitted to hospital.

Predisposing factors include:

- age > 65 years
- background of dementia
- significant injury e.g. hip fracture
- frailty or multimorbidity
- polypharmacy

The precipitating events are often multifactorial and may include:

- infection: particularly urinary tract infections
- metabolic: e.g. hypercalcaemia, hypoglycaemia, hyperglycaemia, dehydration
- change of environment

- any significant cardiovascular, respiratory, neurological or endocrine condition
- severe pain
- alcohol withdrawal
- constipation

Features - a wide variety of presentations

- memory disturbances (loss of short term > long term)
- may be very agitated or withdrawn
- disorientation
- mood change
- visual hallucinations
- disturbed sleep cycle
- poor attention

Management

- treatment of the underlying cause
- modification of the environment
- the 2006 Royal College of Physicians publication 'The prevention, diagnosis and management of delirium in older people: concise guidelines' recommended haloperidol 0.5 mg as the first-line sedative
- the 2010 NICE delirium guidelines advocate the use of haloperidol or olanzapine
- management can be challenging in patients with Parkinson's disease, as antipsychotics can often worsen Parkinsonian symptoms
 - careful reduction of the Parkinson medication may be helpful
 - if symptoms require urgent treatment then the atypical antipsychotics quetiapine and clozapine are preferred



123



Next question >

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Clinical Knowledge Summaries

 21  8

[Delirium](#)

NICE

 21  3

[2010 Delirium guidelines](#)



[Suggest link](#)

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Media





[Delirium](#)

Osmosis - YouTube  1  0



[Parkinson's disease](#)

MedFlix - YouTube  0  0

[Report broken media](#)

Score: **18.8%**

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| 11 | × |
| 12 | ✓ |
| 13 | × |
| 14 | ✓ |
| 15 | × |
| 16 | × |



Question 7 of 16



An 85-year-old woman is admitted to the acute medical unit with abdominal pain, swelling and confusion. She has a past medical history of Parkinson's disease, recurrent urinary tract infections and hypertension. She is on amlodipine, co-careldopa and doxazosin. She lives in a care home. Her behaviour is out of character. She is usually pleasant and talkative and there is no history of memory problems.

Her observations are heart rate 88 beats per minute, respiratory rate 18/minute, oxygen saturations 97% on room air, blood pressure 145/88mmHg and temperature 37.1°C.

Examination reveals impacted faeces in the rectum and some mild suprapubic tenderness. She is inattentive and confused and her cognition fluctuates. She does not tolerate a full neurological exam but you note a unilateral resting tremor and mild bradykinesia.

Urinalysis:

Leucocytes	+++
Nitrites	+
Blood	Negative
Protein	Negative

An ECG is unremarkable.

Blood tests:

Hb	136 g/L	Male: (135-180) Female: (115 - 160)
Platelets	189 * 10 ⁹ /L	(150 - 400)
WBC	8.2 * 10 ⁹ /L	(4.0 - 11.0)
Na ⁺	138 mmol/L	(135 - 145)
K ⁺	4.2 mmol/L	(3.5 - 5.0)
Urea	8.9 mmol/L	(2.0 - 7.0)
Creatinine	111 µmol/L	(55 - 120)
CRP	34 mg/L	(< 5)
Calcium	2.24 mmol/L	(2.20 - 2.6)

TSH	1.2 mIU/L	(0.2 - 5.5)
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She is treated with antibiotics for a presumed urinary tract infection and laxatives and suppositories for constipation. Within a few days, her inflammatory markers have normalized, she has no clinical features of a urinary tract infection and her bowels are opening twice a day normally.

However, despite environmental modifications, 1:1 nursing and the support of her close family, she remains confused, agitated and inattentive. She is a danger both to herself and to other patients on the ward.

Given the likely diagnosis, what is the most appropriate pharmacological management?

<input type="radio"/> Haloperidol	×
<input type="radio"/> Olanzapine	×
<input type="radio"/> Pramipexole	×
<input type="radio"/> Quetiapine	×
<input type="radio"/> Ropinirole	×

Submit answer

Reference ranges ▾

Score: **0%**

- 1 -
- 2 -
- 3 -
- 4 -
- 5 -
- 6 -
- 7** -



Question 7 of 16



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However, despite environmental modifications, 1:1 nursing and the support of her close family, she remains confused, agitated and inattentive. She is a danger both to herself and to other patients on the ward.

Given the likely diagnosis, what is the most appropriate pharmacological management?

Haloperidol	20%
Olanzapine	10%
Pramipexole	3%
Quetiapine	60%
Ropinirole	7%

Quetiapine may be useful in the management of patients with Parkinson's disease who are in an acute confusional state

Important for me Less important




Quetiapine is the correct answer. This patient has delirium that has not responded to conservative measures. Given that she is a danger to herself and others, pharmacological management of her condition is indicated. It is good practice to attempt administration of oral medications in the first instance, where possible. Quetiapine is a suitable choice to aid in the management of delirium in patients with Parkinson's disease as it does not cause worsening of the motor features of Parkinson's disease and can have beneficial effects cognition and psychotic features, if present.

Haloperidol is incorrect. While this is a possible choice for the pharmacological management of delirium, it is a dopamine-antagonist and therefore will worsen the motor features of Parkinson's disease.

Olanzapine is incorrect. This has been shown to cause excessive sedation and worse the motor features of Parkinson's disease.

Ropinirole is incorrect. This is a dopamine agonist used in the management of Parkinson's disease itself. Delirium is a side effect.

Pramipexole is incorrect. This is a dopamine agonist used in the management of Parkinson's disease itself. Delirium is a side effect.

		 Discuss (4)	Improve
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Next question >

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 - if symptoms require urgent treatment then the atypical antipsychotics **quetiapine** and clozapine are preferred



123



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21 3

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Delirium

Osmosis - YouTube  1  0



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Score: 18.8%

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16 ✗



Question 8 of 16



A 75-year-old lady with memory problems attended a specialist memory clinic with her daughter. Her daughter was very concerned and mentioned that her mother had been much more forgetful over the past year. She had left the gas cooker on and occasionally got lost when she walked to the shops. On one occasion she had been found by a neighbour wandering the streets in her dressing gown.

This lady had a family history of Alzheimers disease with both her mother and sister being diagnosed with the condition in their seventies.

On examination she had a Mini Mental State Examination Score of 19/30. Otherwise a full physical examination was unremarkable.

Magnetic resonance of imaging of the brain showed marked atrophy of the medial temporal lobes bilaterally with no evidence of a reversible cause of dementia.

You suspect that this lady has Alzheimers disease and wish to start her on donepezil.

Before starting her on this medication which of the following should you arrange?

<input type="radio"/> Electrocardiogram (ECG)	×
<input type="radio"/> Chest X-ray	×
<input type="radio"/> Echocardiogram	×
<input type="radio"/> Lung function tests	×
<input type="radio"/> Ophthalmology review	×

Submit answer

Reference ranges ▾

Score: **0%**

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| 1 | - |
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Question 8 of 16



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You suspect that this lady has Alzheimers disease and wish to start her on donepezil.

Before starting her on this medication which of the following should you arrange?

Electrocardiogram (ECG)	90%
Chest X-ray	1%
Echocardiogram	6%
Lung function tests	1%
Ophthalmology review	2%

Donepezil is generally avoided (relative contraindication) in patients with bradycardia and is used with caution in other cardiac abnormalities

Important for me Less important

Cholinesterase inhibitors such as donepezil, galantamine and rivastigimine are licensed for use in patients with mild to moderate Alzheimers disease. The National Institute for Health and Care Excellence (NICE) currently recommends treatment for all patients with moderate Alzheimers disease with a Mini Mental State Examination (MMSE) score of 10-20.

The British National Formulary lists sick sinus syndrome and supraventricular conduction problems (such as atrial flutter and atrial fibrillation) as relative contraindications in the prescribing of cholinesterase inhibitors. Although it is not specifically stated in NICE guidance there is a large evidence base to support the practice of performing a routine ECG prior to initiating treatment. There is insufficient evidence to support the use of routine echocardiograms prior to the initiation of cholinesterase inhibitor

For further reading see NICE guidance:

<http://www.nice.org.uk/guidance/index.jsp?action=article&r=true&o=33723>

and the following publication:

<http://jnnp.bmj.com/content/76/suppl5/v53.full.pdf>

		 Discuss (2)	Improve
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Next question >

Alzheimer's disease: management ★

Alzheimer's disease is a progressive degenerative disease of the brain accounting for the majority of dementia seen in the UK

Non-pharmacological management

- NICE recommend *offering* 'a range of activities to promote wellbeing that are tailored to the person's preference'
- NICE recommend *offering* group cognitive stimulation therapy for patients with mild and moderate dementia
- other options to *consider* include group reminiscence therapy and cognitive rehabilitation

Pharmacological management

- NICE updated it's dementia guidelines in 2018
- the three acetylcholinesterase inhibitors (donepezil, galantamine and rivastigmine) as options for managing mild to moderate Alzheimer's disease
- memantine (an NMDA receptor antagonist) is in simple terms the 'second-line' treatment for Alzheimer's, NICE recommend it is used in the following situation reserved for patients with
 - moderate Alzheimer's who are intolerant of, or have a contraindication to, acetylcholinesterase inhibitors

- as an add-on drug to acetylcholinesterase inhibitors for patients with moderate or severe Alzheimer's
- monotherapy in severe Alzheimer's

Managing non-cognitive symptoms

- NICE does not recommend antidepressants for mild to moderate depression in patients with dementia
- antipsychotics should only be used for patients at risk of harming themselves or others, or when the agitation, hallucinations or delusions are causing them severe distress

Donepezil

- is relatively contraindicated in patients with bradycardia
- adverse effects include insomnia



123



Next question >

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Links

NICE

[2018 Dementia guidelines](#)

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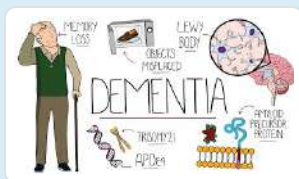
Alzheimer's Society

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Media



[Understanding Dementia \(Alzheimer's & Vascular & Frontotemporal & Lewy Body Dementia\)](#)

Rhesus Medicine - YouTube

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[Pharmacology - DRUGS FOR ALZHEIMER'S DISEASE](#)

Speed Pharmacology - YouTube

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Score: **18.8%**

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- 4 ✗
- 5 ✗
- 6 ✗
- 7 ✓
- 8 ✗
- 9 ✗
- 10 ✗
- 11 ✗
- 12 ✓

13	✗
14	✓
15	✗
16	✗



Question 9 of 16



A 64 year old man presents with a 6 month history of abnormal behaviours which have been noticed by his wife. He has described seeing vivid visual hallucinations of clowns in his living room which sometimes talk to him and appear very real. He believes that he is the head of a circus and is about to go on a world tour although this is not true.

At times he is lucid and is fully independent but at other times he is disorientated in time and place and is unable to perform simple tasks such as preparing food and going to the shops. His wife thinks that his mood is also lower since the onset of symptoms. He presented in A+E today because of having a second fall in two weeks.

There is no history of infective symptoms. He went to see his GP two days ago who thought that he may have a UTI and prescribed trimethoprim.

He has a history of stroke 10 years ago and hypertension and takes warfarin, amlodipine and enalapril.

Physical examination is unremarkable except for slightly increased tone on the left side compared to the right.

Bloods:

Hb	14.9 g/dl
Platelets	$387 \times 10^9/l$
WBC	$12.8 \times 10^9/l$

Na ⁺	142 mmol/l
K ⁺	4.6 mmol/l
Urea	6.4 mmol/l
Creatinine	84 μ mol/l

Bilirubin	6 μ mol/l
ALP	64 u/l
ALT	15 u/l
Calcium	2.35 mmol/l
Albumin	41 g/l

MSU (from GP from 2 days ago): Heavy growth of E.coli Sensitive to trimethoprim, nitrofurantoin, amoxicillin and co-amoxiclav

CT Brain: some generalised atrophy and periventricular white matter changes normal for age. Changes in keeping with an old left sided lacunar infarct

Mini Mental State Examination 17/30

Which medications would most appropriately treat the underlying diagnosis?

<input type="radio"/>	Olanzapine	×
<input type="radio"/>	Rivastigmine	×
<input type="radio"/>	Co-amoxiclav	×
<input type="radio"/>	Sinemet	×
<input type="radio"/>	Aspirin 300mg	×

Submit answer

Reference ranges ▾

Score: **0%**

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MSU (from GP from 2 days ago): Heavy growth of E.coli Sensitive to trimethoprim, nitrofurantoin, amoxicillin and co-amoxiclav

CT Brain: some generalised atrophy and periventricular white matter changes normal for age. Changes in keeping with an old left sided lacunar infarct

Mini Mental State Examination 17/30

Which medications would most appropriately treat the underlying diagnosis?

Olanzapine	8%
Rivastigmine	74%
Co-amoxiclav	8%
Sinemet	6%
Aspirin 300mg	3%

The answer is Rivastigmine. The diagnosis here is Lewy Body dementia. Lewy body dementias core clinical features are fluctuating g cognition, visual hallucinations (present in 2/3rds of cases) and parkinsonism. Two out of three are needed for diagnosis. The visual hallucinations are often very vivid. This patient definitely has two out of the three. He also may have parkinsonism as he has bilaterally increased tone that is not in keeping with his old lacunar infarct.

He also has a few supportive features of Lewy Body Dementia hallucinations in other modalities, delusions, depression and repeated falls.



Currently, evidence best supports cholinesterase inhibitors in the treating of Lewy Body Dementia. It must be remembered that these patients have high sensitivity to neuroleptics so Olanzapine should not be used here. Schizophrenia is a less likely diagnosis as visual hallucinations are rare in late onset schizophrenia and late onset schizophrenia itself is rare. Also, fluctuating mental state is not usually seen in schizophrenia.

Whilst this patient has a UTI, it is sensitive to trimethoprim and therefore is already being appropriately treated and therefore further antibiotics are not required. As the symptoms have been present for 6 months, UTI is unlikely to be the underlying diagnosis.

Whilst the patient does have risk factors for stroke and focal neurology and a TIA is possible, it does not explain his other symptoms and therefore aspirin would not therefore represent

treatment for the underlying diagnosis.

The patient does show features of parkinsonism but a diagnosis of Lewy Body is more suggested by the cognitive and psychiatric symptoms and therefore Sinemet would not be considered before a cholinesterase inhibitor.

		 Discuss (7)	Improve
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Next question >

Lewy body dementia ★

Lewy body dementia is an increasingly recognised cause of dementia, accounting for up to 20% of cases. The characteristic pathological feature is alpha-synuclein cytoplasmic inclusions (Lewy bodies) in the substantia nigra, paralimbic and neocortical areas.

The relationship between Parkinson's disease and Lewy body dementia is complicated, particularly as dementia is often seen in Parkinson's disease. Also, up to 40% of patients with Alzheimer's have Lewy bodies.

Features

- progressive cognitive impairment
 - typically occurs before parkinsonism, but usually both features occur within a year of each other. This is in contrast to Parkinson's disease, where the motor symptoms typically present at least one year before cognitive symptoms
 - cognition may be fluctuating, in contrast to other forms of dementia
 - in contrast to Alzheimer's, early impairments in attention and executive function rather than just memory loss
- parkinsonism
- visual hallucinations (other features such as delusions and non-visual hallucinations may also be seen)

Diagnosis

- usually clinical
- single-photon emission computed tomography (SPECT) is increasingly used. It is currently commercially known as a DaTscan. Dopaminergic iodine-123-radiolabelled 2-carbomethoxy-3-(4-iodophenyl)-N-(3-fluoropropyl) nortropane (123-I FP-CIT) is used as the radioisotope. The sensitivity of SPECT in diagnosing Lewy body dementia is around 90% with a specificity of 100%

Management

- both **acetylcholinesterase inhibitors** (e.g. donepezil, rivastigmine) and memantine can be used as they are in Alzheimer's. NICE have made detailed recommendations about what drugs to use at what stages. Please see the link for more details
- neuroleptics should be avoided in Lewy body dementia as patients are extremely sensitive and may develop irreversible parkinsonism. Questions may give a history of a patient who has deteriorated following the introduction of an antipsychotic agent



Next question >

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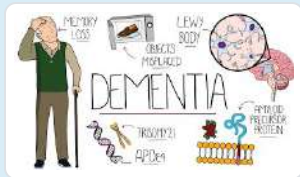
[2018 Dementia guidelines](#)

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Media



[Understanding Dementia \(Alzheimer's & Vascular & Frontotemporal & Lewy Body Dementia\)](#)

Rhesus Medicine - YouTube

👍 5 👎 0



Parkinson's disease

MedFlix - YouTube

👍 0 👎 0



Lewy body dementia

Osmosis - YouTube

👍 3 👎 1

[Report broken media](#)

Score: **18.8%**

- 1 ✗
- 2 ✗
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- 4 ✗
- 5 ✗
- 6 ✗
- 7 ✓
- 8 ✗
- 9** ✗
- 10 ✗
- 11 ✗
- 12 ✓
- 13 ✗
- 14 ✓
- 15 ✗



Question 10 of 16



A 67-year-old man is admitted to the hospital with community-acquired pneumonia. In the acute medical unit, he is becoming progressively more confused and has started having visual hallucinations of children running around the ward. These symptoms are worse at night. Otherwise, there is no evidence of any other neurological or psychiatric symptoms. There is no known past medical history of dementia.

What test would be most appropriate in to confirm the cause of this man's confusion?

- ☐ Cambridge cognition examination ×
- ☐ Confusion assessment method ×
- ☐ Mental state examination ×
- ☐ Mini-mental state examination ×
- ☐ Six-item cognitive impairment test ×

Submit answer

Reference ranges 

Score: **0%**

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- 2 -
- 3 -
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Question 10 of 16



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What test would be most appropriate in to confirm the cause of this man's confusion?

Cambridge cognition examination	6%
Confusion assessment method	33%
Mental state examination	7%
Mini-mental state examination	46%
Six-item cognitive impairment test	9%

The Confusion Assessment Method (CAM) is the best way to differentiate between delirium and dementia

Important for me Less important

Current NICE guidance advises the use of the **Confusion Assessment Method** as the first-line diagnostic test for delirium rather than any of the other cognitive tests. This patient has symptoms consistent with delirium; acute onset, fluctuating course, and visual hallucinations with a preceding insult. It is therefore the most appropriate test in this acute setting. The diagnostic criteria for this test include an acute onset with a fluctuating course with inattention plus either disorganised thinking or an altered level of consciousness.



The **Cambridge cognition examination** is designed to diagnose and assess the severity of dementia. It is not specific for delirium which is the most likely diagnosis here and therefore is not the most appropriate test.

A **mental state examination** is a comprehensive way to assess mental disorders. Although this does include cognitive testing, it is not as useful or concise as the confusion assessment method to quickly differentiate between delirium and dementia. Therefore, as the psychiatric symptoms are limited to cognition, it would be more appropriate in this acute setting to use the confusion

assessment method.

Although the **mini-mental state examination** can be used to assess cognition, it is not designed to distinguish between dementia and delirium. Although repeat tests may be useful in demonstrating deterioration or fluctuation in cognition, the confusion assessment method would be more appropriate in this instance of acute confusion to differentiate between delirium and dementia.

The **six-item cognitive impairment test** is again a test used to quantify the extent of dementia, rather than delirium. Therefore it would not be the most appropriate test here to distinguish between the two.



Discuss (2)

Improve

Next question >

Delirium vs. dementia ★

Factors favouring delirium over dementia

- acute onset
- impairment of consciousness
- fluctuation of symptoms: worse at night, periods of normality
- abnormal perception (e.g. illusions and hallucinations)
- agitation, fear
- delusions



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123



Next question >


B

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Textbooks



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Media





Parkinson's disease

MedFlix - YouTube  3  0













Delirium

Osmosis - YouTube  2  1

[Report broken media](#)

Score: **18.8%**

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| 11 | ✗ |
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Question 11 of 16



A 65-year-old man is reviewed in the memory clinic. He has been diagnosed with Lewy-body dementia as well as Parkinson's disease. Whilst the Parkinson's disease is being managed with levodopa, he and his wife have found the dementia to be worsening. On objective testing, he is found to have mild dementia.

Which one of the following medications should be offered to alleviate his cognitive impairment?

- ☐ Donepezil ×
- ☐ Clopidogrel + atorvastatin ×
- ☐ Haloperidol ×
- ☐ Increase levodopa dose ×
- ☐ No medical treatment is available ×

Submit answer

Reference ranges 

Score: **0%**

- 1 -
- 2 -
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Question 11 of 16



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Which one of the following medications should be offered to alleviate his cognitive impairment?

Donepezil	83%
Clopidogrel + atorvastatin	0%
Haloperidol	2%
Increase levodopa dose	2%
No medical treatment is available	13%

Acetylcholinesterase inhibitors (e.g. donepezil, rivastigmine) can help alleviate the features of Lewy body dementia

Important for me Less important




The correct answer is **Donepezil**. Donepezil is a cholinesterase inhibitor which works by increasing the levels of acetylcholine in the brain, improving cognitive function. According to the UK guidelines (NICE), donepezil can be prescribed for patients with mild to moderate dementia due to Alzheimer's disease or Lewy body dementia. In this case, as the patient has mild Lewy body dementia, donepezil would be an appropriate choice to alleviate his cognitive impairment.

Clopidogrel + atorvastatin are not indicated for treating cognitive impairment in dementia. Clopidogrel is an antiplatelet agent used for preventing thrombotic events, while atorvastatin is a statin used for lowering cholesterol levels and reducing cardiovascular risk. Although there have been studies suggesting that statins may have a protective effect against dementia, they are not recommended as a treatment for cognitive decline in current guidelines.

Haloperidol is an antipsychotic medication that might be used in managing behavioural and psychological symptoms of dementia (BPSD) such as agitation or hallucinations. However, it does not improve cognitive function and should be used with caution in patients with Lewy body dementia or Parkinson's disease due to the risk of worsening extrapyramidal symptoms.

Increase levodopa dose would not be an appropriate choice since levodopa mainly targets motor symptoms of Parkinson's disease rather than cognitive impairment associated with Lewy body dementia. Additionally, increasing the dose may lead to side effects such as dyskinesia or hallucinations without providing significant benefits for cognition.

No medical treatment is available is incorrect because there are medications like donepezil that can help alleviate cognitive impairment in patients with mild to moderate Lewy body dementia. Although there is no cure for dementia, medications like donepezil can help improve the quality of life for patients and their caregivers by managing symptoms.

		 Discuss (2)	Improve
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Next question >

Lewy body dementia ★

Lewy body dementia is an increasingly recognised cause of dementia, accounting for up to 20% of cases. The characteristic pathological feature is alpha-synuclein cytoplasmic inclusions (Lewy bodies) in the substantia nigra, paralimbic and neocortical areas.

The relationship between Parkinson's disease and Lewy body dementia is complicated, particularly as dementia is often seen in Parkinson's disease. Also, up to 40% of patients with Alzheimer's have Lewy bodies.

Features

- progressive cognitive impairment
 - typically occurs before parkinsonism, but usually both features occur within a year of each other. This is in contrast to Parkinson's disease, where the motor symptoms typically present at least one year before cognitive symptoms
 - cognition may be fluctuating, in contrast to other forms of dementia
 - in contrast to Alzheimer's, early impairments in attention and executive function rather than just memory loss
- parkinsonism
- visual hallucinations (other features such as delusions and non-visual hallucinations may also be seen)

Diagnosis

- usually clinical

- single-photon emission computed tomography (SPECT) is increasingly used. It is currently commercially known as a DaTscan. Dopaminergic iodine-123-radiolabelled 2-carbomethoxy-3-(4-iodophenyl)-N-(3-fluoropropyl) nortropane (123-I FP-CIT) is used as the radioisotope. The sensitivity of SPECT in diagnosing Lewy body dementia is around 90% with a specificity of 100%

Management

- both **acetylcholinesterase inhibitors** (e.g. donepezil, rivastigmine) and memantine can be used as they are in Alzheimer's. NICE have made detailed recommendations about what drugs to use at what stages. Please see the link for more details
- neuroleptics should be avoided in Lewy body dementia as patients are extremely sensitive and may develop irreversible parkinsonism. Questions may give a history of a patient who has deteriorated following the introduction of an antipsychotic agent



123



Next question >

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[2018 Dementia guidelines](#)



22



15

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Media

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12 ✔

13 ✖

14 ✔

15 ✖

16 ✖



Question 12 of 16



You are in General Practice when a 75-year-old lady is brought in by her concerned daughter. She reports that she has been acting strangely recently and calling her up in the middle of the night thinking that strangers are in the house. She also seems disorientated with time and frequently gets ready for bed in the middle of the day. Her daughter reports that some days she can seem 'back to her old self' and appears completely lucid.

On direct questioning the patient is orientated to time and space but is rambling and tangential, often speaking off topic. She admits to visual hallucinations including a cat that has been following her round very several months. She is otherwise well but says that she has become 'slowed down' in general over the last year.

Current medication includes rivaroxaban for atrial fibrillation and amitriptyline for fibromyalgia.

On review of the patient's medical records, you note she has been brought in several times over the past six months with similar complaints and each time has been given a course of antibiotics for a suspected UTI.

What is the most underlying cause of the patient's presentation?

- | | |
|--|---|
| <input type="radio"/> Psychotic episode | × |
| <input type="radio"/> Recurrent urinary tract infections | × |
| <input type="radio"/> Lewy body dementia | × |
| <input type="radio"/> Medication induced | × |
| <input type="radio"/> Subdural haemorrhage | × |

Submit answer

Reference ranges ▾

Score: **0%**

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Question 12 of 16



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Current medication includes rivaroxaban for atrial fibrillation and amitriptyline for fibromyalgia.

On review of the patient's medical records, you note she has been brought in several times over the past six months with similar complaints and each time has been given a course of antibiotics for a suspected UTI.

What is the most underlying cause of the patient's presentation?

Psychotic episode	1%
Recurrent urinary tract infections	5%
Lewy body dementia	87%
Medication induced	5%
Subdural haemorrhage	2%



Lewy body dementia typically presents with fluctuating cognition in contrast to other forms of dementia

Important for me Less important

The three cardinal features of Lewy body dementia are visual hallucinations, fluctuating confusion, and features of Parkinsonism. Presentations can be mistaken for delirium and are often treated for UTIs. A detailed history to uncover the longstanding and progressive nature of the disease is essential. Patients often report the sensation that others are present in their homes. Other features

that could suggest Lewy body include a history of REM sleep behaviour disorder or 'confusional arousals' on waking from a nap. Careful examination should be taken to look for bradykinesia, rigidity, or rest tremor - this was suggested by the general 'slowing down' in this patient.

Medications such as amitriptyline have a high anticholinergic burden index and can contribute to cognitive impairment but wouldn't typically cause visual hallucinations. Equally subdural haemorrhage can cause a fluctuating confusion but would be more likely to have focal neurology rather than hallucinations. Nevertheless, brain imaging in this patient is essential.

		 Discuss (1)	Improve
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Next question >

Lewy body dementia ★

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The relationship between Parkinson's disease and Lewy body dementia is complicated, particularly as dementia is often seen in Parkinson's disease. Also, up to 40% of patients with Alzheimer's have Lewy bodies.

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The sensitivity of SPECT in diagnosing Lewy body dementia is around 90% with a specificity of 100%

Management

- both **acetylcholinesterase inhibitors** (e.g. donepezil, rivastigmine) and memantine can be used as they are in Alzheimer's. NICE have made detailed recommendations about what drugs to use at what stages. Please see the link for more details
- neuroleptics should be avoided in Lewy body dementia as patients are extremely sensitive and may develop irreversible parkinsonism. Questions may give a history of a patient who has deteriorated following the introduction of an antipsychotic agent



123



Next question >

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22

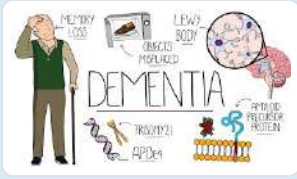


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Media



Understanding Dementia (Alzheimer's & Vascular & Frontotemporal & Lewy Body Dementia)

Rhesus Medicine - YouTube

👍 5 🗨️ 0



Parkinson's disease

MedFlix - YouTube

👍 0 🗨️ 0



Lewy body dementia

Osmosis - YouTube

👍 3 🗨️ 1

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Score: **18.8%**

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Question 13 of 16



An 80-year-old man was brought to hospital after a collapse. A carer at his nursing home reports he became pale and slumped unresponsive in a chair but regained consciousness after a few minutes. His past medical history includes hypertension, hypothyroidism, mild dementia and a previous seizure 15 years ago.

Paramedics at the scene reported a heart rate of 34/min which has now resolved. Examination reveals normal heart sounds, capillary refill of 3 seconds and a regular pulse of 60/min. Which of his medications may be responsible for the collapse?

- | | |
|---|---|
| <input type="radio"/> Bendroflumethiazide | × |
| <input type="radio"/> Triamterene | × |
| <input type="radio"/> Levothyroxine | × |
| <input type="radio"/> Sodium valproate | × |
| <input type="radio"/> Donepezil | × |

Submit answer

Reference ranges ▾

Score: **0%**

- 1 -
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Paramedics at the scene reported a heart rate of 34/min which has now resolved. Examination reveals normal heart sounds, capillary refill of 3 seconds and a regular pulse of 60/min. Which of his medications may be responsible for the collapse?

Bendroflumethiazide	6%
Triamterene	3%
Levothyroxine	1%
Sodium valproate	2%
Donepezil	88%

Donepezil is a cholinesterase inhibitor used in the treatment of mild to moderate dementia. Its vagotonic effect can lead to bradycardia and heart block. This can occur particularly when co-administered with other anticholinergics and drugs that inhibit the CYP450 enzyme 3A4 and 2D6 as plasma levels of donepezil will be increased.



Discuss (1)

Improve

[Next question >](#)

Alzheimer's disease: management ★

Alzheimer's disease is a progressive degenerative disease of the brain accounting for the majority of dementia seen in the UK

Non-pharmacological management

- NICE recommend *offering* 'a range of activities to promote wellbeing that are tailored to the person's preference'
- NICE recommend *offering* group cognitive stimulation therapy for patients with mild and moderate dementia
- other options to *consider* include group reminiscence therapy and cognitive rehabilitation

Pharmacological management

- NICE updated it's dementia guidelines in 2018
- the three acetylcholinesterase inhibitors (donepezil, galantamine and rivastigmine) as options for managing mild to moderate Alzheimer's disease
- memantine (an NMDA receptor antagonist) is in simple terms the 'second-line' treatment for Alzheimer's, NICE recommend it is used in the following situation reserved for patients with
 - moderate Alzheimer's who are intolerant of, or have a contraindication to, acetylcholinesterase inhibitors
 - as an add-on drug to acetylcholinesterase inhibitors for patients with moderate or severe Alzheimer's
 - monotherapy in severe Alzheimer's

Managing non-cognitive symptoms

- NICE does not recommend antidepressants for mild to moderate depression in patients with dementia
- antipsychotics should only be used for patients at risk of harming themselves or others, or when the agitation, hallucinations or delusions are causing them severe distress

Donepezil

- is relatively contraindicated in patients with bradycardia
- adverse effects include insomnia



123



Next question >

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[2018 Dementia guidelines](#)

Alzheimer's Society

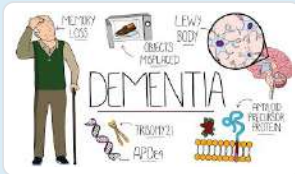
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[Helping you to assess cognition - A practical toolkit for clinicians](#)

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Media



[Understanding Dementia \(Alzheimer's & Vascular & Frontotemporal & Lewy Body Dementia\)](#)

Rhesus Medicine - YouTube

👍 3 🗑️ 0



[Pharmacology - DRUGS FOR ALZHEIMER'S DISEASE](#)

Speed Pharmacology - YouTube

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[Report broken media](#)

Score: **18.8%**

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| 11 | ✗ |
| 12 | ✓ |
| 13 | ✗ |
| 14 | ✓ |
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Question 14 of 16



An 83-year-old woman attends the memory clinic along with her son with a 7-month history of memory loss. She reports feeling well today, but her son explains the previous week she was confused and disoriented. Her son also tells you that he fears his mother has been hallucinating since she has told him that she sees her husband sitting at the dinner table with her. However, he died 5 years ago. She has a background of osteoarthritis and borderline diabetes but has otherwise been well with no recent illnesses.

On examination, her heart rate is 86bpm and regular. Her sitting and standing blood pressures are 152/95mmHg and 138/86mmHg respectively. On auscultation, she has a clear chest with normal heart sounds. Her abdomen is soft with no palpable masses. There is a slight tremor in her left hand with increased rigidity. She walks well with a walking stick but there is a shuffling gait. Her MMSE is 20/30.

Assuming the likely diagnosis, what is the most appropriate treatment to initiate?

- | | |
|------------------------------------|---|
| <input type="radio"/> Haloperidol | × |
| <input type="radio"/> Levodopa | × |
| <input type="radio"/> Memantine | × |
| <input type="radio"/> Rivastigmine | × |
| <input type="radio"/> Ropinirole | × |

Submit answer

Reference ranges ▾

Score: 0%

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Question 14 of 16



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On examination, her heart rate is 86bpm and regular. Her sitting and standing blood pressures are 152/95mmHg and 138/86mmHg respectively. On auscultation, she has a clear chest with normal heart sounds. Her abdomen is soft with no palpable masses. There is a slight tremor in her left hand with increased rigidity. She walks well with a walking stick but there is a shuffling gait. Her MMSE is 20/30.

Assuming the likely diagnosis, what is the most appropriate treatment to initiate?

Haloperidol	2%
Levodopa	17%
Memantine	10%
Rivastigmine	66%
Ropinirole	5%

Acetylcholinesterase inhibitors (e.g. donepezil, rivastigmine) can help alleviate the features of Lewy body dementia

Important for me Less important

This patient has Lewy body dementia (LBD). An MMSE of 20 suggests a diagnosis of mild dementia. Symptoms of LBD can vary from person to person and typically include fluctuating confusion, disturbances in sleep, mood changes and hallucinations. There is an overlap with Parkinson's disease, and motor symptoms may manifest as the disease progresses. This scenario describes a woman with increased rigidity, tremor and a shuffling gait which suggests the onset of Parkinsonian features. Unlike Parkinson's disease dementia, LBD is the development of cognitive impairment prior to the onset of motor symptoms. Whereas, the definition of Parkinson's disease dementia requires the duration of motor symptoms to be present for at least 1 year before the




onset of cognitive impairment. NICE guidelines recommend the use of acetylcholinesterase inhibitors in the management of Alzheimer's disease and LBD, making rivastigmine the correct choice.

Haloperidol is an antipsychotic medication that works through the inhibition of dopaminergic receptors. It is sometimes given to treat acute agitation. However, it can worsen co-existing parkinsonian symptoms and should not be given in patients with Parkinson's disease or LBD.

Levodopa is the first-line treatment for Parkinson's disease. Whilst this patient does have symptoms of Parkinson's disease, she also has fluctuating confusion and cognitive impairment. From the clinical history, it seems that the onset of memory loss preceded motor symptoms, making LBD more likely.

Memantine is an NMDA receptor antagonist, blocking glutamate transmission in the brain. Memantine monotherapy is recommended as an option for managing severe LBD and Alzheimer's disease or moderate disease in patients who cannot tolerate AChE inhibition. An MMSE score of 12 or less suggests severe dementia. This patient has a much higher MMSE score and no contraindications to AChE therapy are given in the scenario, making rivastigmine the preferred initial treatment option.

Ropinirole is another treatment option for Parkinson's disease. It is not used in the treatment of cognitive impairment in LBD.

   Discuss (3) [Improve](#)

[Next question >](#)

Lewy body dementia ★

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The relationship between Parkinson's disease and Lewy body dementia is complicated, particularly as dementia is often seen in Parkinson's disease. Also, up to 40% of patients with Alzheimer's have Lewy bodies.

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Management

- both acetylcholinesterase inhibitors (e.g. donepezil, rivastigmine) and memantine can be used as they are in Alzheimer's. NICE have made detailed recommendations about what drugs to use at what stages. Please see the link for more details
- neuroleptics should be avoided in Lewy body dementia as patients are extremely sensitive and may develop irreversible parkinsonism. Questions may give a history of a patient who has deteriorated following the introduction of an antipsychotic agent



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Next question >

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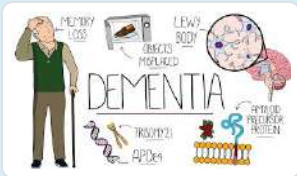
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[2018 Dementia guidelines](#)

[Suggest link](#)

[Report broken link](#)

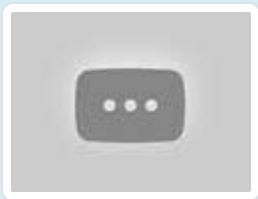
Media



[Understanding Dementia \(Alzheimer's & Vascular & Frontotemporal & Lewy Body Dementia\)](#)

Rhesus Medicine - YouTube

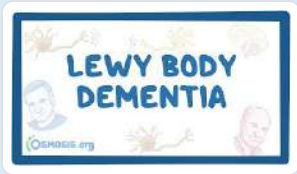
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[Parkinson's disease](#)

MedFlix - YouTube

👍 0 🗑️ 0



[Lewy body dementia](#)

Osmosis - YouTube

👍 3 🗑️ 1

[Report broken media](#)

Score: **18.8%**

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| 16 | × |



Question 15 of 16



A 58-year-old male is brought into your outpatient clinic by his wife. The patient does not understand why he needs to see a doctor and just wants to get back to work. However, she reports a rather vague history of increasing withdrawal from social interactions and odd repetition of 'catch phrases' over the past 9 months. In addition, she feels his behaviour has changed and is very inappropriate when meeting up with friends, once urinating at the table while having dinner. Last week, he gave her a grave headstone for her birthday, saying 'it is nice to be well-prepared!' While she was understandably upset, he was mystified as to why his well thought out gift might have caused distress. On examination, he continues to repeat the phrase 'Whats up doc?!' at a regular interval, disturbing your history taking. You finally complete a mini-mental test examination, scoring 27/30. What is the most likely diagnosis?

- ☐ No medical diagnosis ×
- ☐ Borderline personality disorder ×
- ☐ Bipolar disorder ×
- ☐ Schizophrenia ×
- ☐ Frontotemporal dementia ×

Submit answer

Reference ranges 

Score: **0%**

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- 5 -

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Question 15 of 16



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No medical diagnosis

1%

Borderline personality disorder

4%

Bipolar disorder

1%

Schizophrenia

3%

Frontotemporal dementia

90%

The history described of behavioural change, lack of insight, mental rigidity and stereotyped behaviours. The prominent behavioural features with a lack of amnesic features are typical for the behavioural variant of frontotemporal dementia. These patients do not typically retain insight and cognitive functions may be normal in early disease. The main differential diagnoses consist of psychiatric disorders. The patient presents with first symptoms at late-fifties and while not impossible, it is rare for psychiatric disorders to be diagnosed so late in life. It is important to rule out other organic causes of behavioural changes with MRI neuroimaging, such as frontal lobe space occupying lesions.



Discuss (6)

Improve

Next question >

Frontotemporal lobar degeneration ★

Frontotemporal lobar degeneration (FTLD) is the third most common type of cortical dementia after Alzheimer's and Lewy body dementia.

There are three recognised types of FTLD

- Frontotemporal dementia (Pick's disease)
- Progressive non fluent aphasia (chronic progressive aphasia, CPA)
- Semantic dementia

Common features of frontotemporal lobar dementias

Onset before 65

Insidious onset

Relatively preserved memory and visuospatial skills

Personality change and social conduct problems

Pick's disease

This is the most common type and is characterised by personality change and impaired social conduct. Other common features include hyperorality, disinhibition, increased appetite, and perseveration behaviours.

Focal gyral atrophy with a knife-blade appearance is characteristic of Pick's disease.

Macroscopic changes seen in Pick's disease include:-

- Atrophy of the frontal and temporal lobes

Microscopic changes include:-

- Pick bodies - spherical aggregations of tau protein (silver-staining)
- Gliosis
- Neurofibrillary tangles
- Senile plaques

Management

- NICE do not recommend that AChE inhibitors or memantine are used in people with frontotemporal dementia

CPA

Here the chief factor is non fluent speech. They make short utterances that are agrammatic. Comprehension is relatively preserved.

Semantic dementia

Here the patient has a fluent progressive aphasia. The speech is fluent but empty and conveys little meaning. Unlike in Alzheimer's memory is better for recent rather than remote events.



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Next question >

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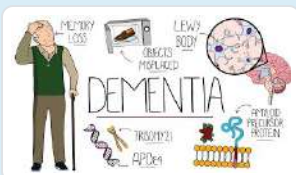


Textbooks

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Media



[Understanding Dementia \(Alzheimer's & Vascular & Frontotemporal & Lewy Body Dementia\)](#)

Rhesus Medicine - YouTube



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Score: **18.8%**

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| 9 | ✗ |
| 10 | ✗ |
| 11 | ✗ |
| 12 | ✓ |
| 13 | ✗ |
| 14 | ✓ |
| 15 | ✗ |
| 16 | ✗ |



A 72-year-old man attends the memory clinic with his wife. He was referred by his GP after his wife noticed his short term memory had deteriorated, he was getting lost around the village he had lived in for the last 40 years and his mood had changed.

His past medical history includes hypothyroidism, hypertension and arthritis. He has recently been discharged from cardiology outpatients where they decided a pacemaker was not indicated as he is asymptomatic of the abnormalities found on his ECG. He takes levothyroxine, ramipril, amlodipine and paracetamol.

There was no abnormality found on physical examination. The patient scored 20/30 on MMSE (mild impairment 21-30, moderate impairment 11-10 and severe impairment 0-10). The results of his blood tests are listed below:

Hb	137 g/L	(135-180)
Platelets	279 * 10 ⁹ /L	(150 - 400)
WBC	7.5 * 10 ⁹ /L	(4.0 - 11.0)
Na ⁺	138 mmol/L	(135 - 145)
K ⁺	4.3 mmol/L	(3.5 - 5.0)
Urea	6.8 mmol/L	(2.0 - 7.0)
Creatinine	130 µmol/L	(55 - 120)
Calcium	2.4 mmol/L	(2.1-2.6)
Thyroid-stimulating hormone (TSH)	4.9 mU/L	(0.5-5.5)
Free thyroxine (T4)	13.5 pmol/L	(9.0 - 18)
Haematinics	normal	
HIV serology	negative	
Syphilis serology	negative	

His ECG showed sinus rhythm at 41bpm with a PR interval of 140ms.

An MRI head showed global cerebral atrophy, particularly in the temporal lobe (disproportionate hippocampal atrophy).

The patient and his wife are keen to discuss what treatments and support are available to them.

What would be the most suitable treatment for this patient?

<input type="radio"/>	Donepezil	×
<input type="radio"/>	Atorvastatin	×
<input type="radio"/>	Memantine	×
<input type="radio"/>	Galantamine	×
<input type="radio"/>	Sertraline	×

Submit answer

Reference ranges ▾

Score: **0%**

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What would be the most suitable treatment for this patient?

Donepezil	27%
Atorvastatin	1%
Memantine	55%
Galantamine	16%
Sertraline	1%

Donepezil is generally avoided (relative contraindication) in patients with bradycardia and is used with caution in other cardiac abnormalities

Important for me Less important

Alzheimer's disease is the most common form of dementia. The short term memory loss and MRI findings in this patient are in keeping with this diagnosis.

Donepezil is advocated as the first-line treatment for Alzheimer's disease by NICE. However, this is contraindicated in this patient given his bradycardia on ECG and so is incorrect.

Atorvastatin can be used in vascular dementia as cardiovascular risk factor modification.

Galantamine is another acetylcholine esterase inhibitor like donepezil. Like donepezil, it can cause bradycardia but also atrioventricular block, and so is contraindicated in this patient who has resting bradycardia and 1st-degree heart block.

Sertraline is an antidepressant and is not recommended by NICE for the management of mood symptoms in Alzheimer's disease.

Memantine is the correct answer. This is used as second-line treatment (where 1st line treatment has failed or is contraindicated) or add on therapy. Given first-line treatment is contraindicated in this patient, memantine is the most suitable management option.

   Discuss (6) [Improve](#)

Alzheimer's disease is a progressive degenerative disease of the brain accounting for the majority of dementia seen in the UK

Non-pharmacological management

- NICE recommend *offering* 'a range of activities to promote wellbeing that are tailored to the person's preference'
- NICE recommend *offering* group cognitive stimulation therapy for patients with mild and moderate dementia
- other options to *consider* include group reminiscence therapy and cognitive rehabilitation

Pharmacological management

- NICE updated it's dementia guidelines in 2018
- the three acetylcholinesterase inhibitors (donepezil, galantamine and rivastigmine) as options for managing mild to moderate Alzheimer's disease
- memantine (an NMDA receptor antagonist) is in simple terms the 'second-line' treatment for Alzheimer's, NICE recommend it is used in the following situation reserved for patients with
 - moderate Alzheimer's who are intolerant of, or have a contraindication to, acetylcholinesterase inhibitors
 - as an add-on drug to acetylcholinesterase inhibitors for patients with moderate or severe Alzheimer's
 - monotherapy in severe Alzheimer's

Managing non-cognitive symptoms

- NICE does not recommend antidepressants for mild to moderate depression in patients with dementia
- antipsychotics should only be used for patients at risk of harming themselves or others, or when the agitation, hallucinations or delusions are causing them severe distress

Donepezil

- is relatively contraindicated in patients with bradycardia
- adverse effects include insomnia



123



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Textbooks

High-yield textbook

Extended textbook



Links

NICE

 24  6

[2018 Dementia guidelines](#)

Alzheimer's Society

 14  3

[Helping you to assess cognition - A practical toolkit for clinicians](#)

[Suggest link](#)



[Report broken link](#)

Media



[Understanding Dementia \(Alzheimer's & Vascular & Frontotemporal & Lewy Body Dementia\)](#)


Rhesus Medicine - YouTube

 3  0



[Pharmacology - DRUGS FOR ALZHEIMER'S DISEASE](#)

Speed Pharmacology - YouTube

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